REMARKS

Claims 1-30 are pending in this application. Claims 1-7, 11-13, 23-30 have been canceled. Claims 8, 10, 17 and 19 have been amended to reflect a more accurate description of the present invention and draw their support from the specification at page 6, line 18, and page 9 lines 12-17. Claims 31-41 have been added and draw their support from the specification in general. As such, no new matter has been added. The invention of claims 8-10 and 14-22 is discussed below with reference to the Office Action mailed February 28, 2006.

Claims 17-19 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claims 8-10 and 20-22 stand rejected under 35 U.S.C. §102(b) as being anticipated by McGuire et al. (U.S. Patent No. 4,314,880). Claims 8-10 and 20-21 stand rejected under 35 U.S.C. §102(b) as being anticipated by Furukawa (JP 54-17360). Claims 8-10 and 20-21 stand rejected under 35 U.S.C. §102(b) as being anticipated by Rallis (U.S. Patent No. 4,655,852). Claims 8-10, 14 and 20-21 stand rejected under 35 U.S.C. §102(b) as being anticipated by Okumura (JP 06-299312). Claims 8-10, 14-16 and 21 stand rejected under 35 U.S.C. §102(b) as being anticipated by Van Ooij (U.S. Patent No. 6,372,296). Claims 8-10 and 14-22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Van Ooij in view of Applicant's disclosure of the prior art. Claims 8-10 and 14-22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Okumura in view of Applicant's disclosure of the prior art.

Remarks Directed to the Rejection of Claims 17-19 under 35 U.S.C. §112, Second Paragraph

Claims 17 and 19 have been amended such that sufficient antecedent basis is now provided for the limitation of these claims. Therefore, claims 17 and 19 are believed to be in

allowable form. Claim 18 depends on claim 17 and is likewise believed to be in allowable form.

Given the amendments to claim 17 and 19, rejection of claims 17-19 under 35 U.S.C. §112, second paragraph, is requested.

Remarks Directed to Rejection of Claims 8-10 and 20-22 under 35 U.S.C. §102(b) as Being Anticipated by McGuire et al. (U.S. Patent No. 4,314,880)

McGuire et al. is cited as disclosing steel having an iron-aluminide intermetallic alloy layer with a thickness of about 0.001 inches and an aluminum content of 23.8%. However, McGuire et al. discloses an iron-aluminide intermetallic alloy layer on austenitic or ferritic stainless steels (column 2, lines 5-11). Furthermore, the 23.8% aluminum disclosed in McGuire et al. is related to the chemical composition of an aluminide coating on type 304 stainless steel (column 2, lines 32-47). In contrast, the present invention discloses a corrosion-resistant steel comprising a steel substrate, wherein the steel substrate is taught to be "mild steel" (page 6, line 14 – page 7, line 3 and page 7, lines 13-15, claim 8).

Anticipation has always been held to require absolute identity and structure between the claimed structure and a structure disclosed in a single reference. In *Richardson v. Suzuki Motor Co., Ltd.*, 868 F.2d 1226, 9 USPQ2d 1913 (Fed. Cir. 1989) it was stated, "Every element of the claimed invention must be literally present, arranged as in the claim." As such, McGuire et al. does not anticipate the present invention, and claim 8 and all claims depending thereon are now believed to be in allowable form.

Given the above remarks, rejection of claims 8-10 and 20-22 under 35 U.S.C. §102(b) as being anticipated by McGuire et al. is requested.

Remarks Directed to Rejection of Claims 8-10 and 20-21 under 35 U.S.C. §102(b) as Being Anticipated by Furukawa (JP 54-17360)

The above remarks regarding anticipation are herein incorporated by reference. Furukawa is cited as disclosing a steel having an iron-aluminide intermetallic alloy layer with a thickness of between 10 and 30 microns. However, in addition to a layer thickness of between 10 and 30 microns, Furukawa further teaches an aluminized steel plate composed of an aluminum-iron intermetallic compound, with an aluminum plating clad required on top of said intermetallic (Abstract). Claim 8 of the present invention teaches a mild steel substrate with an adjacent iron-aluminum intermetallic alloy layer and no aluminum plating clad required on top of said layer. Furthermore, presently amended claim 8 teaches an iron-aluminum intermetallic alloy layer with a thickness of greater than 1 micron and less than 5 microns. As such, there is no absolute identity and structure between the claimed structure of the present invention and the structure disclosed in a Furukawa. Claim 8 and all claims depending thereon are thus believed to be in allowable form.

Given the above remarks, withdrawal of the rejection to claims 8-13 and 20-21 under 35 U.S.C. §102(b) as being anticipated by Furukawa is requested.

Remarks Directed to the Rejection of Claims 8-10 and 20-21 under 35 U.S.C. §102(b) as Being Anticipated by Rallis (U.S. Patent No. 4,655,852)

The above remarks regarding anticipation are herein incorporated by reference. Rallis is cited as disclosing a steel having an iron-aluminide intermetallic alloy layer with a thickness of between 0.002 to 0.027 inches. Regarding claim 8, said claim has been amended such that the present invention affords an iron-aluminide intermetallic alloy layer with a thickness of greater than 1 micron and less than 5 microns. Rallis does not disclose such a limitation. Regarding claim 9, as this claim depends on independent claim 8, which is now believed to be in allowable

form, claim 9 is also believed to be in allowable form. Regarding claims 10, similar to claim 8, Rallis does not disclose the limitation of an iron-aluminide intermetallic alloy layer with a thickness of less than 5 microns. Regarding claim 20, this claim depends upon claim 9 which is now believed to be in independent form. Therefore, claim 20 is believed to be in allowable form. Regarding claim 21, Rallis does not disclose the limitation of the iron-aluminum intermetallic layer being substantially devoid of rare earth metals. This limitation in combination with the dependency of claim 21 upon claim 9, which is now believed to be in allowable form, puts claim 21 in allowable form.

Given the above remarks, withdrawal of the rejection to claims 8-13 and 20-21 under 35 U.S.C. §102(b) as being anticipated by Rallis is requested.

Remarks Directed to the Rejection of Claims 8-10, 14 and 20-21 under 35 U.S.C. §102(b) as Being Anticipated by Okumura (JP 06-299312)

The above remarks regarding anticipation are herein incorporated by reference. Okumura is cited as disclosing a steel having an iron-aluminide intermetallic alloy layer with a thickness of about 1 micron or less but with comparative examples up to 5 microns. Regarding claim 8, Okumura teaches an iron-aluminide intermetallic layer must be *less than or equal* to 1 micron or else said layer is too brittle (Paragraph [0009]). In contrast, the present invention teaches a mild steel substrate with an adjacent iron-aluminum intermetallic layer having a thickness of *greater than* 1 micron. As such, there is no overlapping between the teachings of Okumura and the present invention, particularly since a relatively thick layer as disclosed in the present invention is taught to be too brittle by Okumura. Applicant thereby argues the present invention is not anticipated by Okumura.

Regarding claims 9 and 20-21, Okumura is cited as disclosing an iron-aluminide intermetallic layer with an aluminum content of 20-80 weight percent. However, with respect to the iron-aluminide intermetallic layer, Okumura only discloses compositions regarding the liquid alloy bath in which a steel substrate is dipped into (Abstract, paragraphs [0011] and [0012]). Nothing with respect to the composition of the iron-aluminide intermetallic layer is provided. Therefore, the compositional limits as cited in claims 9 and 20-21 are not taught nor anticipated by Okumura and these claims are believed to be in allowable form. Regarding claims 10 and 14, as these claims depend upon claim 9, which is now believed to be in allowable form, claims 10 and 14 are also believed to be in allowable form.

Given the above remarks, withdrawal of rejections to claims 8-10, 14 and 20-21 under 35 U.S.C. §102(b) as being anticipated by Okumura is requested.

Remarks Directed to Rejection of Claims 8-10, 14-16 and 21 under 35 U.S.C. §102(b) as Being Anticipated by Van Ooij (U.S. Patent No. 6,372,296)

The above remarks regarding anticipation are herein incorporated by reference. Van Ooij is cited as disclosing a steel having an iron-aluminide intermetallic alloy layer with a thickness of preferably 75 microns and a further upper layer comprising zinc of preferred thickness of 25 microns. Regarding claim 8, the current amendment to this claim provides for the limitation of the iron aluminum intermetallic layer having a thickness of greater than 1 micron and less than 5 microns. This limitation is not taught by Van Ooij and therefore claim 8 is not anticipated by this reference. Regarding claim 9, Van Ooij discloses an inner layer of intermediate iron aluminates such as Fe_2Al_5, $FeAl_2$ and Fe_2Al_3. However, chemical compositions of the iron-aluminum intermetallic layer are not given. Given that an iron-aluminum intermetallic layer with at least 18% aluminum by weight is not disclosed in Van Ooij and said composition does

not fall within the compositions of any of the above stated iron-aluminides, it is submitted that claim 9 is not anticipated by this reference.

Regarding claim 10, similar to claim 8 this claim falls outside the limitation disclosed in Van Ooij. Therefore, claim 10 is not anticipated by this reference. Regarding claim 14, as this claim depends upon claim 9, which is now believed to be in allowable form, claim 14 is also believed to be in allowable form. Regarding claim 15, as this claim depends upon claim 14, which is now believed to be in allowable form, claim 15 is also believed to be in allowable form. Regarding claim 16, this claim depends upon claim 15, which is now believed to be in allowable form, therefore claim 16 is also believed to be in allowable form. Regarding claim 21, the limitation of an iron-aluminum intermetallic layer substantially devoid of rare earth metals is not disclosed in Van Ooij. Furthermore, claim 21 depends on claim 9, which is now believed to be in allowable form. Therefore, claim 21 is not anticipated by Van Ooij and is now believed to be in allowable form.

Given the above remarks, withdrawal of the rejection of claims 8-16 and 21 under 35 U.S.C. §102(b) as being anticipated by Van Ooij is requested.

Remarks Directed to Rejection of Claims 8-10 and 14-22 under 35 U.S.C. §103(a) as Being Unpatentable over Van Ooij in View of Applicant's Disclosure of the Prior Art

The above remarks regarding anticipation by Van Oiij are herein incorporated by reference. Van Ooij is cited as disclosing a steel having an iron-aluminide intermetallic alloy layer with a thickness of preferably 75 microns and an upper layer of zinc with a preferred thickness of 25 microns. Applicant is cited as disclosing a use of barrier coatings and galvanic coatings in a multilayer laminate coating in order to further protect steel and a phosphating agent

crystalline comprising hexafluoro-titanium phosphate and an aluminum particulate filled cured epoxy overlayer as commonly used to increase corrosion resistance.

The combination of Van Ooij with the cited Applicant's disclosure would result in a steel having an iron-aluminide intermetallic alloy layer with a thickness of 75 microns and an upper layer of zinc having a thickness of 25 microns plus additional barrier coatings that result in a multilayer laminate coating.

Regarding claims 8-10, Van Ooij does not anticipate these claims (as discussed above) and said combination does not teach the present invention. Regarding claims 14-22, said combination fails to teach a mild steel with an adjacent iron-aluminum intermetallic layer having a thickness of greater than 1 micron and less than 5 microns, which these claims depend thereon. Therefore, claims 8-10 and 14-22 are not obvious in light of Van Ooij in view of Applicant's disclosure of the prior art and are believed to be in allowable form.

Given the above remarks, withdrawal of the rejection of claims 8-10 and 14-22 under 35 U.S.C. §103 as being unpatentable over Van Ooij in view of Applicant's disclosure of the prior art is requested.

Remarks Directed to the Rejection of Claims 8-10 and 14-22 under 35 U.S.C. §103(a) as Being Unpatentable over Okumura in View of Applicant's Disclosure of the Prior Art

The above remarks regarding anticipation by Okumura are herein incorporated by reference. Okumura is cited as disclosing a steel having an iron-aluminide intermetallic alloy layer with a thickness of about 1 micron or less but with comparative examples up to 5 microns and said layer having an aluminum content of 20-80 weight percent. Applicant is cited as disclosing the use of barrier coatings and galvanic coatings in a multilayer laminate coating in order to further protect steel and a phosphating agent crystalline comprising hexafluoro-titanium

phosphate and an aluminum particulate filled cured epoxy overlayer as commonly used to increase corrosion resistance. However, Okumura teaches an iron-aluminide intermetallic layer must be *less than or equal* to 1 micron or else said layer is too brittle (Paragraph [0009]). Furthermore, Okumura teaches compositions regarding the liquid alloy bath in which a steel substrate is dipped into (Abstract, paragraphs [0011] and [0012]) with nothing regarding the composition of the iron-aluminide intermetallic layer itself provided.

The combination of Okumura with the cited disclosure of the Applicant would result in dipping a steel into a liquid alloy bath with a composition of 20-80 wt % aluminum in order to produce an iron-aluminide intermetallic alloy layer with a thickness of less than 1 micron, along with the use of barrier coatings such as a phosphating agent crystalline comprising hexafluoro-titanium phosphate and an aluminum particulate filled cured epoxy overlayer.

Regarding claims 8 and 9, the present invention teaches a corrosion resistant steel comprising a mild steel with an adjacent iron-aluminum intermetallic layer with a thickness of *greater than* 1 micron and less than 5 microns (claim 8) and the iron-aluminum intermetallic layer itself having a composition of at least 18 wt% aluminum (claim 9). Okumura does not anticipate these claims (as discussed above) and said combination does not teach the present invention. Therefore, claims 8 and 9 are believed to be in allowable form. Claims 10, 14 and 20-22 depend on claim 9, which is believed to be in allowable form, and are likewise believed to be in allowable form. Claims 15 and 17 depend on claim 14, which is believed to be in allowable form, and are likewise believed to be in allowable form. Claim 16 depends on claim 15 and claims 18-19 depend on claim 17, both of which are believed to be in allowable form. Therefore, claims 16 and 18-19 are believed to be in allowable form.

Given the above remarks, withdrawal of the rejection of claims 8-10 and 14-22 under 35 U.S.C. §103 as being unpatentable over Okumura in view of Applicant's disclosure of the prior art is requested.

Summary

Claims 8-10, 14-22 and 31-41 are submitted for consideration. Each claim is believed to be in allowable form and directed to patentable subject matter. Reconsideration and withdrawal of the outstanding rejections and the passing of this application to issuance are solicited. Should the Examiner find to the contrary, he is respectfully requested to contact the undersigned attorney in charge of this application to resolve any remaining issues.

Respectfully submitted,

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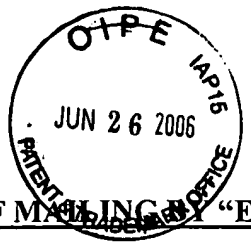

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